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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/987,353 | 11/14/2001 | William D. Wilber | A8240 | 6948 |

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| EXAMINER |
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JONES, STEPHEN E

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| ART UNIT | PAPER NUMBER |
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2817

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------|---------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/987,353 | WILBER ET AL. | |
| | Examiner | Art Unit | |
| | Stephen E. Jones | 2817 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-35 is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-23 and 36-45 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 28 January 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities:

It appears that the method phrase "filling said block with dielectric" more appropriately should read as --forming said block of dielectric material-- since the dielectric block is coated with a conductive material (e.g. see page 4, lines 25-26 of the present specification, and see present claim 2) rather than the conductive material being filled with dielectric material.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 16-17 and 19-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claims 16 and 17, the phrase "said block resonator filter" lacks antecedent basis.

Regarding Claims 19 and 23, the phrase "said block" lacks antecedent basis.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-2, 4-7, 9, 11, 15, 16, 18-22, 36-40, 42 and 45 (insofar as Claims 16 and 19-21 could be understood) are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Wang et al. (A Practical Triple-Mode Monoblock Bandpass Filter For Base Station Applications) (cited by applicant).

Wang et al. (Figs. 1a and 1b) teaches a monoblock filter including: corner cuts which couple plural modes (e.g. see Page 2, Col. 2, lines 12-14) and inherently the poles are increased since the modes are coupled in the same manner as the present invention and thus the size of the structure is reduced in the same manner as the present invention (i.e. having the three resonator modes in one block equates to conventional 3-cavity/block resonator filters the same as the present invention); inherently the dielectric block is coated with a conductive material so that the waveguide contains the propagated signal to function properly (as is conventional for dielectric waveguides such as shown in Figs. 1a and 1b) (Claims 1, 2, 6, 11, 15, 19, 36, 38, 39); inherently the modes are orthogonal since the cuts are perpendicular in the same manner as the present invention (Claims 5, 18); input/output couplings (i.e. probes) are used to input and output the signal energy (see page 1, Col. 2, last paragraph and Fig. 1a) (Claims 7, 16, 40); one of the cuts can be considered to be in the Y, X or the Z axis since the designation of the axis is relative to ones orientation (Claims 9, 20, 21, 22, 42); the different resonant modes within the block can be considered individual resonators in the same manner as the present invention since the three modes equate

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to a conventional 3-cavity block resonator filter (Claim 37); and Figs. 1a and 1b show that two block resonators can be linked by a waveguide (Claim 45).

6. Claims 1, 4, 7, 15-16, 36-38, 40, and 42-43 (insofar as claim 16 could be understood) are rejected under 35 U.S.C. 102(a) as being anticipated by Ko et al. (JP2001060804A).

Ko et al. teaches a filter including: a block of dielectric material partially filling a conductive housing (see Figs. 4 and 8) (Claim 38); three corners of the block are scraped away and results in 3 resonate modes which inherently increases the number of poles in the same manner as the present invention by having the 3 resonant modes in a single block (instead of three resonant blocks) and thus providing the miniaturization of the structure (Claim 1); it is inherent that the modes couple in the same manner as the present invention since the Ko structure is the same as the presently claimed invention (Claims 4, 15, 16); probes are provided as terminals to inherently input and output signal energy (e.g. see the machine translation section 26) (Claims 7, 40); the three resonate modes in the block can be considered three distinct resonators in the same manner as the present invention since each mode functions as a resonator (Claims 36, 37); and the three corner cuts are all in a 90 degree X, Y, Z relationship (Claims 42-43).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (A Practical Triple-Mode Monoblock Bandpass Filter For Base Station Applications) (cited by applicant).

Wang et al. teaches a filter as described above. However, Wang et al. does not explicitly teach that the dielectric is a low loss high dielectric material.

It would have been considered obvious to one of ordinary skill in the art to have made the dielectric block of a low loss high dielectric constant material, because it is well-known that the use of high dielectric constant materials allow for the advantageous benefit of a reduced size filter, and the use of a low loss dielectric material is obvious because a high loss material would cause the signal to be dissipated which is undesirable. Also, it should be noted that the term "low" is a relative term and any dielectric material would meet the requirement since the term "low" is not defined in the claim.

10. Claims 3, 6, 9-11, 13, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ko et al. (JP2001060804A).

Ko teaches a block filter as described above and suggests that low loss high dielectric constant materials are a known dielectric resonator material (see the machine translation, section 2).

However, Ko does not teach that the corners are removed by the method of cutting (Claims 6, 9, 10, 11, 13), or explicitly that the dielectric is a low loss high dielectric constant material (Claims 3, 44).

It would have been considered obvious to one of ordinary skill in the art to have made the dielectric block of a low loss high dielectric constant material, because it is well-known that the use of high dielectric constant materials allows for the advantageous benefit of a reduced size filter, and the use of a low loss dielectric material is obvious because a high loss material would cause the signal to be dissipated which is undesirable. Also, it should be noted that the term "low" is a relative term and any dielectric material would meet the requirement since the term "low" is not defined in the claim.

Also, it would have been considered obvious to one of ordinary skill in the art to have removed the corners of the Ko dielectric block by cutting instead of scraping, because cutting is a well-known art-recognized method for removing material from a dielectric substance.

11. Claims 8, 12, 17, 23 and 41 (insofar as claims 17 and 23 could be understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (A Practical Triple-Mode Monoblock Bandpass Filter For Base Station Applications)(cited by applicant) in view of Arakawa et al.

Wang et al. teaches a filter as described above. However, Wang et al. does not explicitly teach that the block has a hole formed in it that has a plated interior and a connection for an external circuit (Claims 8, 17, 23, 41).

Arakawa et al. teaches a dielectric waveguide resonator filter (Fig. 18) which includes plated holes (5) for input and output which include a connection part (3) for an external circuit (e.g. see Col. 12, lines 30-37, and the last few lines of the abstract).

It would have been obvious to one of ordinary skill in the art to have substituted plated input/output holes having connection parts such as taught by Arakawa in place of the probes in the Wang filter, because it would have provided the advantageous benefit of a coupling mechanism that reduces electromagnetic leakage (e.g. see the last few lines of the abstract), thereby suggesting the obviousness of such a modification.

Allowable Subject Matter

12. Claims 24-35 are allowed.

13. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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14. The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claims 24-35, Wang et al. (A Practical Triple-Mode Monoblock Bandpass Filter For Base Station Applications) (cited by applicant) does not explicitly teach that a passband of the mask filter is wider than a passband of the block filter. Regarding Claim 14, Wang does not teach that cutting the at least one corner includes cutting in three axes (X, Y, and Z) of the block.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Doust et al. (Satellite Multiplexing Using Dielectric Resonator Filters) teaches that the use of dielectric resonators allows for size reduction based on the dielectric constant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 703-305-0390. The examiner can normally be reached on Monday through Friday from 8 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 703-308-4909. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-308-6251 for regular communications and 703-308-6251 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Stephen Jones
Patent Examiner
Art Unit 2817

SEJ
April 30, 2003